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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/580,485	05/30/00	YAMAZAKI	S 0756-2154

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EXAMINER

SARKAR, A

ART UNIT

PAPER NUMBER

2813

10

DATE MAILED: 03/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/580,485

Applicant(s)

YAMAZAKI ET AL.

Examiner

Asok K. Sarkar

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 24-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-23 and 30-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Claims 1 – 5 and 7 - 23 in Paper No. 9 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 6 and 24 – 29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species II, there being no allowable generic or linking claim. Election was treated as **without** traverse in Paper No. 9.

Additional claims 30 – 35 were grouped under the elected claims and were examined.

Specification

2. The disclosure is objected to because of the following informalities:

In page 1, line 18, “ ... amorous silicon film ...” should be changed to “ ... amorphous silicon film ...”. In page 2, line 19, the author Shimada should be changed to Shimoda. In page 14, line 26, “ ... oxygen so it if preferable ...” should be changed to “ ... oxygen so it is preferable ...”. In page 19, line 19, “ ... single layer by a ...” should be changed to “ ... single layer or by a ...”. In page 31, lines 9 and 21, “group 15” should be replaced by “Group V”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 4, 5, 30, 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of limitation "an uppermost layer" in these claims is confusing since the meaning of this phrase is unclear. Use of confusing language within claim renders the claim indefinite.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 8, 13, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al., US 5,684,365 (Admitted prior art) in view of Kurosawa et al., US 6,057,647 and Shimoda et al., JP 410,012,377 A (Admitted prior art).

Tang et al. discloses a method of forming TFT-EL display panel using organic electroluminescent media (see Title) where they disclose forming a plurality of TFTs over a substrate with respect to Figs. 2 and 8, forming a plurality of pixel electrodes 72 each being connected to each of the plurality of TFTs in column 7, lines 16 –25, forming an organic EL layer 82 over the plurality of pixel electrodes in column 7, line 42. Tang et al. discloses the formation of the EL layer by vapor deposition and suggests that other conventional techniques can be used in column 8, lines 8 – 11.

Tang et al. fails to disclose that the EL layer is selectively formed through an ink jet method corresponding to each of the plurality of pixel electrodes.

Kurosawa et al. teaches selective formation of EL layer corresponding to each of the plurality of pixel electrodes by an ink jet method in column 7, lines 13 – 19 and in column 15, lines 42.

Shimoda et al. discloses a method of manufacturing organic EL display system where they teach forming the EL layers forming an inkjet system (see abstract).

Therefore, given the substantial teaching of Tang et al. in view of Kurosawa et al. and Shimoda et al., it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Tang et al.'s method by depositing the EL layer by inkjet method since depositing EL layer by the inkjet method will be far less expensive.

7. Claims 3, 4, 5, and 30 - 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al., US 5,684,365 in view of Kurosawa et al., US 6,057,647 and Shimoda et al., JP 410,012,377 A (Admitted prior art) and Ogura et al., JP 07,014,678 A (Admitted prior art).

Tang et al. teaches forming the TFTs, pixel electrodes and the organic EL layers on the pixel electrodes as described above with respect to claims 1 and 2.

Tang et al. teaches forming an insulating film 52 covering the plurality of TFT's with respect to Figs 7 and 8 in column 7, lines 26 – 27 (claim 4) and forming plurality of openings (54 and 56) in the insulating film 52 with respect to Fig. 5 in column 7, line 16 (claim 5).

Tang et al. teaches that the insulating material is preferably silicon dioxide (see column 7, lines 14 – 15) but fails to teach forming the EL layer by inkjet method, forming the EL layer consisting of three colored layers, red green and blue (claim 3) and the insulating film is capable of preventing penetration of an alkali metal (claims 4, 5 and 30 - 32).

Kurosawa et al. and Shimoda et al. teach inkjet printing method of forming the EL layer as described earlier with respect to claims 1 and 2. Kurosawa et al. teaches the method of forming three EL layers of each color separately in column 10, lines 22 – 34. Shimoda et al. also teaches inkjet printing of three separate color layer in the English abstract of their disclosure.

Kurosawa et al. and Shimoda et al. fail to teach that the insulating film is capable of preventing penetration of an alkali metal (claims 4, 5 and 30 - 32).

Ogura et al. teaches that both Si_3N_4 and SiO_2 can be used as ion barriers for alkali ion diffusion to provide EL element with high reliability (see English abstract).

Therefore, given the substantial teaching of Tang et al. in view of Kurosawa et al. and Shimoda et al. and Ogura et al, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Tang et al.'s method by depositing the 3 separate EL layers by inkjet method since depositing EL layer by the inkjet method will be far less expensive. Additionally, the insulating layer covering the TFTs will provide high reliability to the overlying EL layers by preventing penetration of an alkali metal.

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8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al., US 5,684,365 in view of Kurosawa et al., US 6,057,647 and Shimoda et al., JP 410,012,377 A (Admitted prior art) and Ogura et al., JP 07,014,678 A (Admitted prior art) as applied to claim 3 above, and further in view of Littman et al., US 5,688,551.

Tang et al. in view of Kurosawa et al. and Shimoda et al. and Ogura et al. do not teach that the pixels corresponding to red, green and blue color are formed in contact with each other.

Littman et al. teaches a method a forming an organic EL display panel where they teach the pixels corresponding to red, green and blue color are formed in contact with each other with reference to Figs. 3a – 3e in column 4, lines 34 - 49.

Therefore, given the substantial teaching of Tang et al. in view of Kurosawa et al. and Shimoda et al. and Ogura et al, and further in view of Littman et al., it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Tang et al.'s method by depositing the 3 separate EL layers by inkjet method where the three colored pixel touch each other.

9. Claims 9, 14, 16, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al., US 5,684,365 in view of Kurosawa et al., US 6,057,647 and Shimoda et al., JP 410,012,377 A (Admitted prior art) and Ogura et al., JP 07,014,678 A (Admitted prior art) as applied to claims 1 - 5 above, and further in view of Shimoda et al., SID 99 Digest, p 376 – 379 (Admitted prior art).

Tang et al. in view of Kurosawa et al., and Shimoda et al., (Admitted prior art) and Ogura et al. do not teach the inkjet method using piezo element.

Shimoda et al. in a published article titled "Multicolor Pixel patterning of Light-Emitting Polymers by Ink-Jet Printing" teaches the inkjet method using piezo element in Table 1 in page 377, column 1 under the heading "Ink-Jet machine".

Therefore, given the substantial teaching of Tang et al. in view of Kurosawa et al. and Shimoda et al. and Ogura et al, and further in view of Shimoda et al., it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Tang et al.'s method by depositing the EL layers by inkjet method using a piezo element.

10. Claims 10, 21 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al., US 5,684,365 in view of Kurosawa et al., US 6,057,647 and Shimoda et al., JP 410,012,377 A (Admitted prior art) and Ogura et al., JP 07,014,678 A (Admitted prior art) as applied to claims 4 and 5 above, and further in view of Kim et al., US 6,100,954.

Tang et al. in view of Kurosawa et al., and Shimoda et al., (Admitted prior art) and Ogura et al. do not teach the insulating film comprising an organic resin and an insulating layer capable of preventing penetration of an alkaline metal on the organic resin film.

Kim et al. discloses a method of forming a liquid crystal display with organic planarization layer where they teach forming an insulating layer comprising an organic layer 159 with respect to Figs 15A – 15G and 16A to 16G and an inorganic insulating layer 181 on the on the organic layer 159 in column 19, lines 42 - 65. The insulating films of SiO₂ and Si₃N₄ are taught by them in column 12, lines 10 – 20.

Therefore, given the substantial teaching of Tang et al. in view of Kurosawa et al. and Shimoda et al. and Ogura et al, and further in view of Kim et al., it would have been obvious to one with ordinary skill in the art at the time of the invention to use insulating film comprising an organic resin and an insulating layer capable of preventing the penetration of an alkaline metal on the organic resin film.

11. Claims 11, 12, 22, 23, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al., US 5,684,365 in view of Kurosawa et al., US 6,057,647 and Shimoda et al., JP 410,012,377 A (Admitted prior art) and Ogura et al., JP 07,014,678 A (Admitted prior art) as applied to claims 4 and 5 above, and further in view of Nagao, K., JP 60,228,821 (The admitted prior art).

Tang et al. in view of Kurosawa et al., and Shimoda et al., (Admitted prior art) and Ogura et al. do not teach the insulating film comprising an element such as B, C, N, Al, Si and also comprises Si, Al, N, O and M where M is Ce, Yb, Sm, Er, Y, La, Gd, Dy and Nd.

Nagao teaches an antiwear protective film having excellent alkali resistance where the insulating film comprises an element such as B, C, N, Al, Si and also comprises Si, Al, N, O and M where M is Ce, Yb, Sm, Er, Y, La, Gd, Dy and Nd (see the English Abstract).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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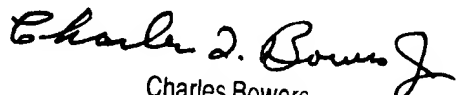
Bradley, Jr. et al., US 5,824,374; Bao et al., US 6,150,668 and Ozawa et al., US 6,194,837 teaches inkjet printing of various layers including EL layers. Zavracky et al., US 5,438,241 teaches about fabrication of colored display devices. Ouellet, L., US 5,270,267 and Shimada et al., US 6,097,459 disclose organic insulating layers capable of preventing alkali diffusion.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asok K. Sarkar whose telephone number is (703) 308-2521. The examiner can normally be reached on 8:00 AM - 5:00PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Bowers can be reached on (703) 308-2417. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-4918.

Asok K. Sarkar
March 15, 2001


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